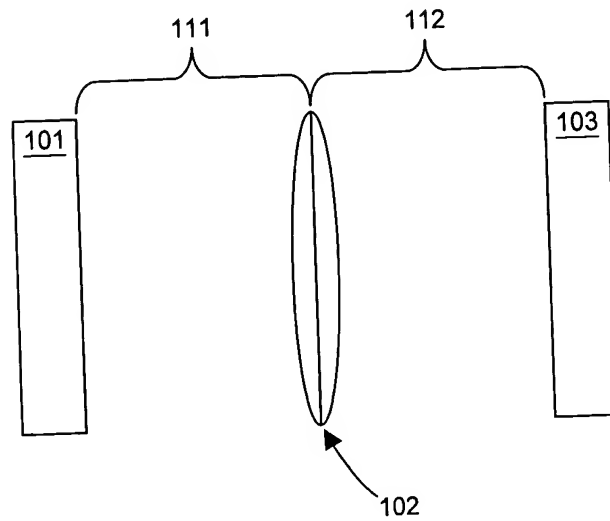
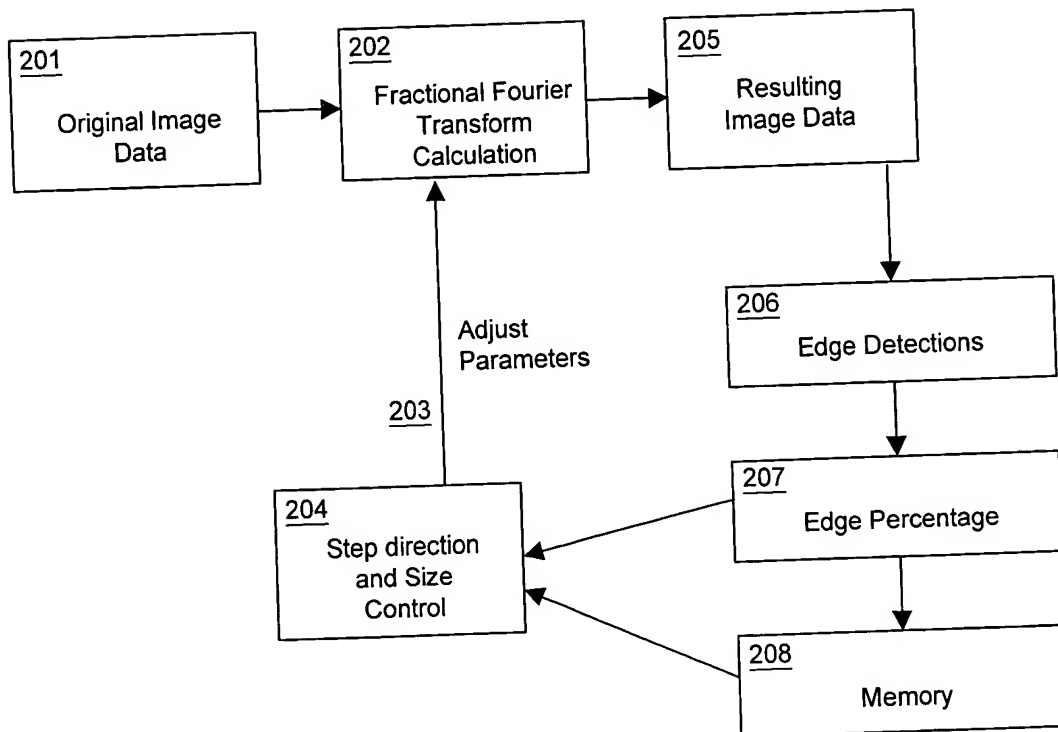


**RELATIVE OPTICAL PATH PHASE RECONSTRUCTION  
IN THE CORRECTION OF MISFOCUSED IMAGES USING  
FRACTIONAL POWERS OF THE FOURIER TRANSFORM**  
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**FIG. 1**

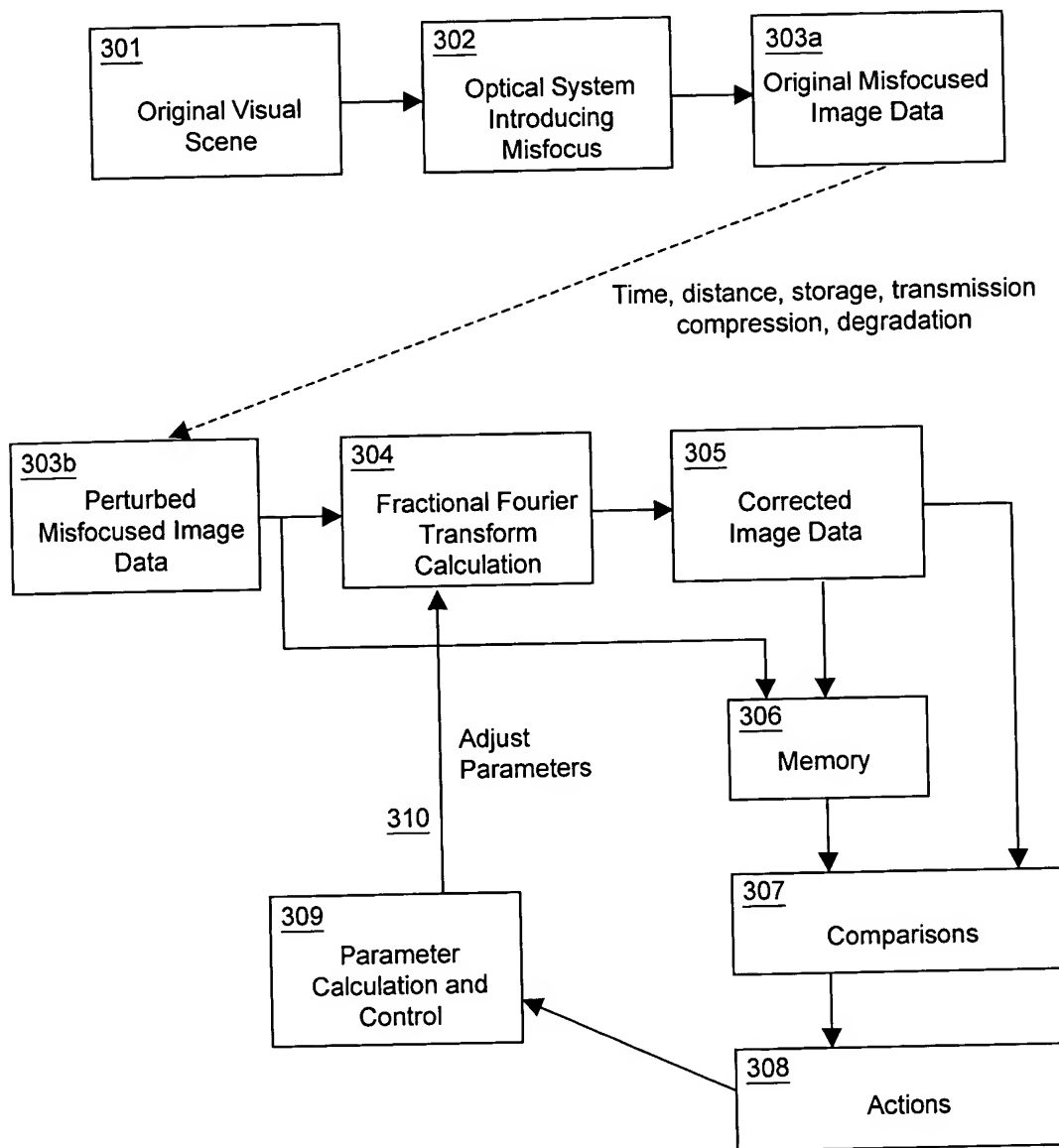


**FIG. 2**

**RELATIVE OPTICAL PATH PHASE RECONSTRUCTION  
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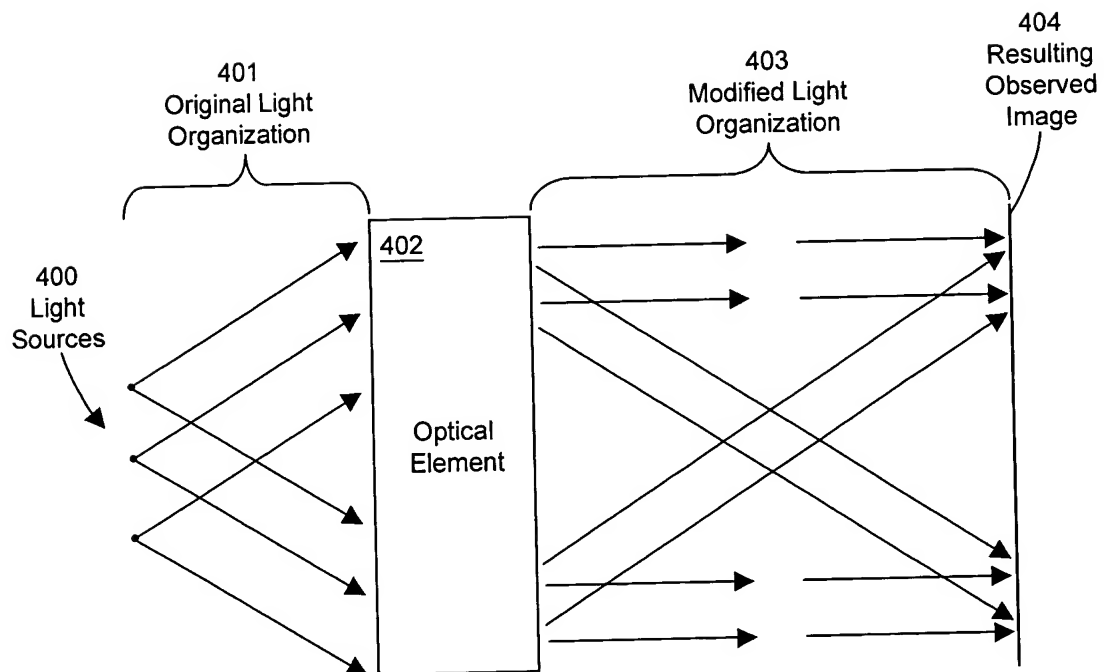
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**FIG. 3**

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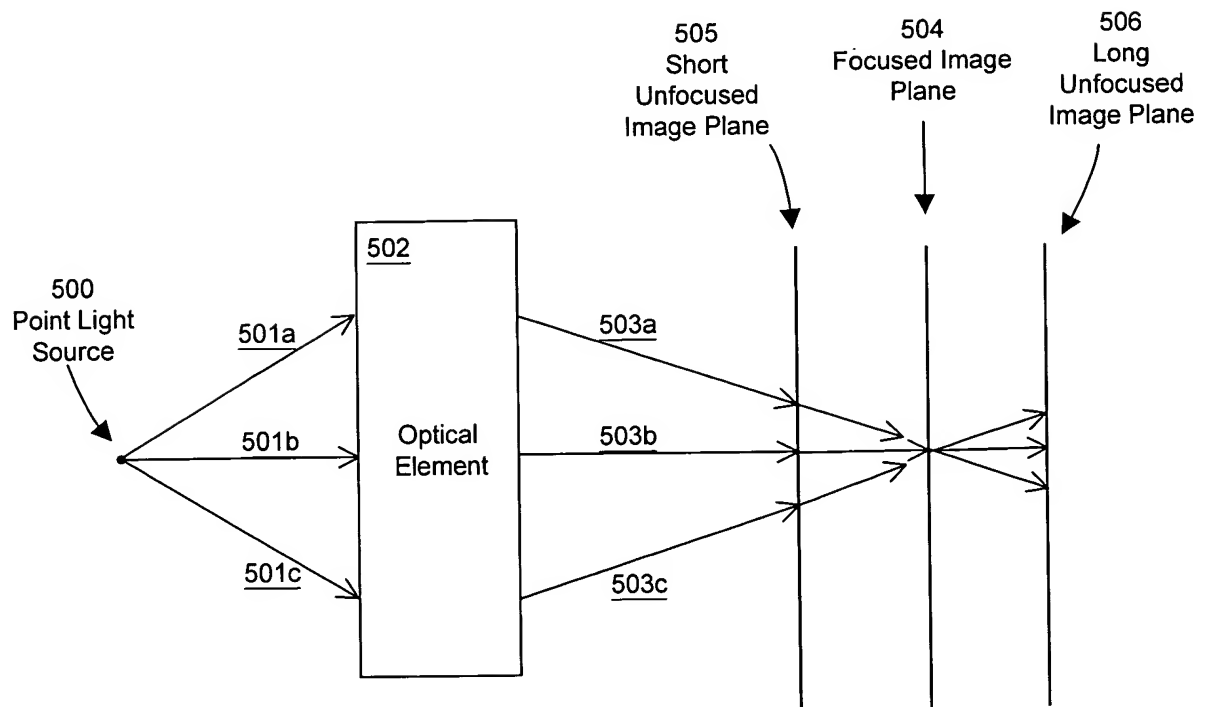
**FIG. 4**

**RELATIVE OPTICAL PATH PHASE RECONSTRUCTION  
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**FIG. 5**

# RELATIVE OPTICAL PATH PHASE RECONSTRUCTION IN THE CORRECTION OF MISFOCUSED IMAGES USING FRACTIONAL POWERS OF THE FOURIER TRANSFORM

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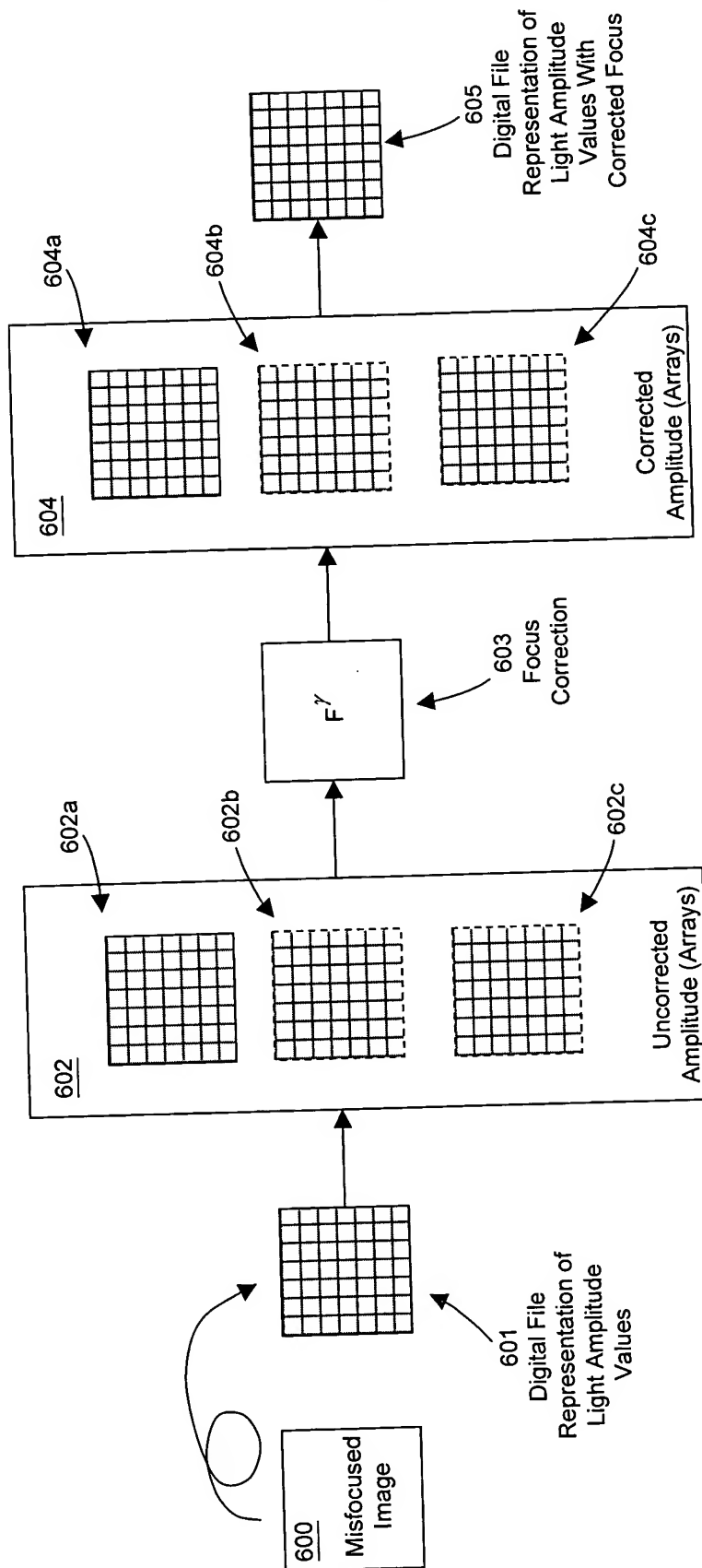
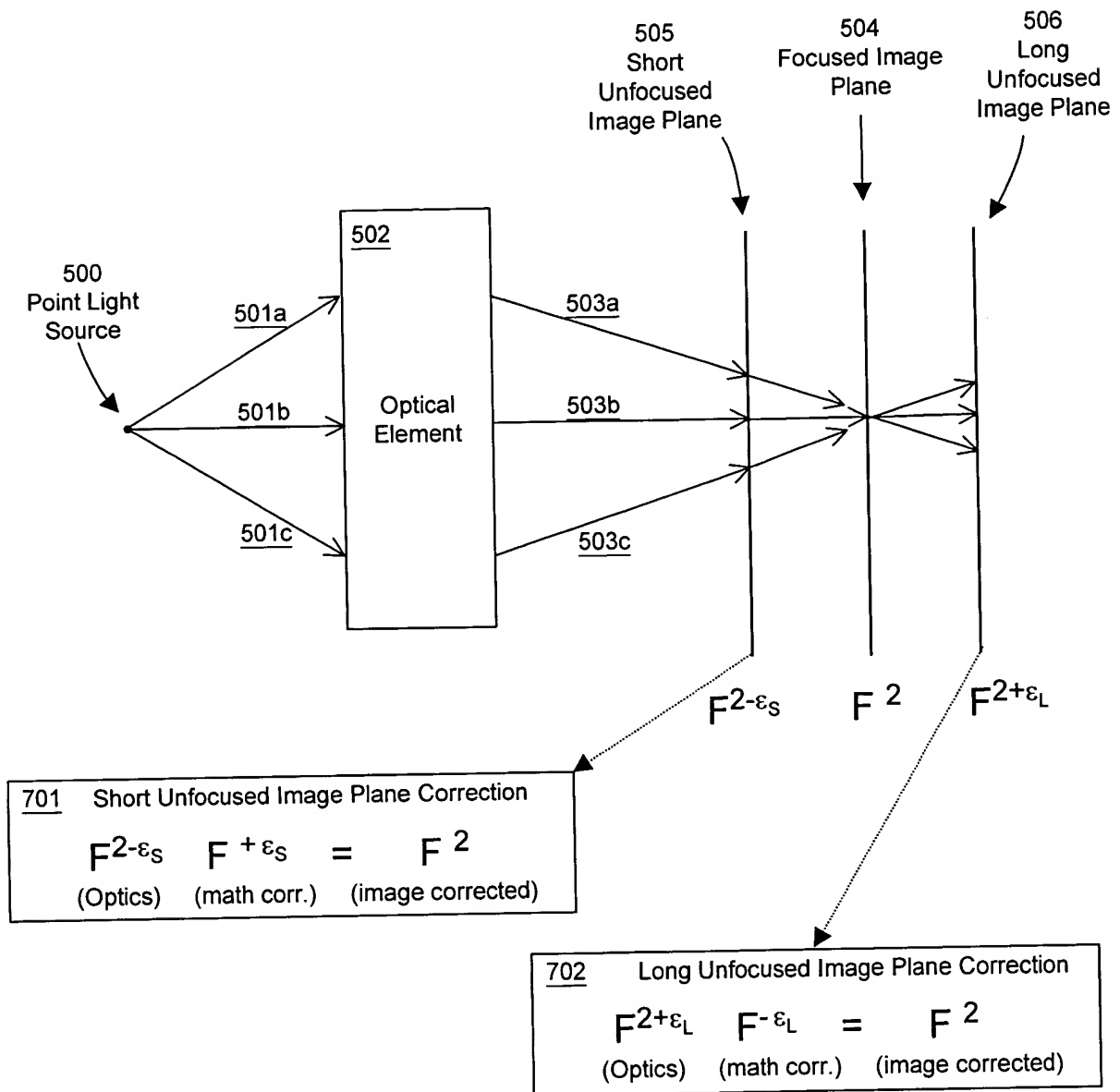


FIG. 6

**RELATIVE OPTICAL PATH PHASE RECONSTRUCTION  
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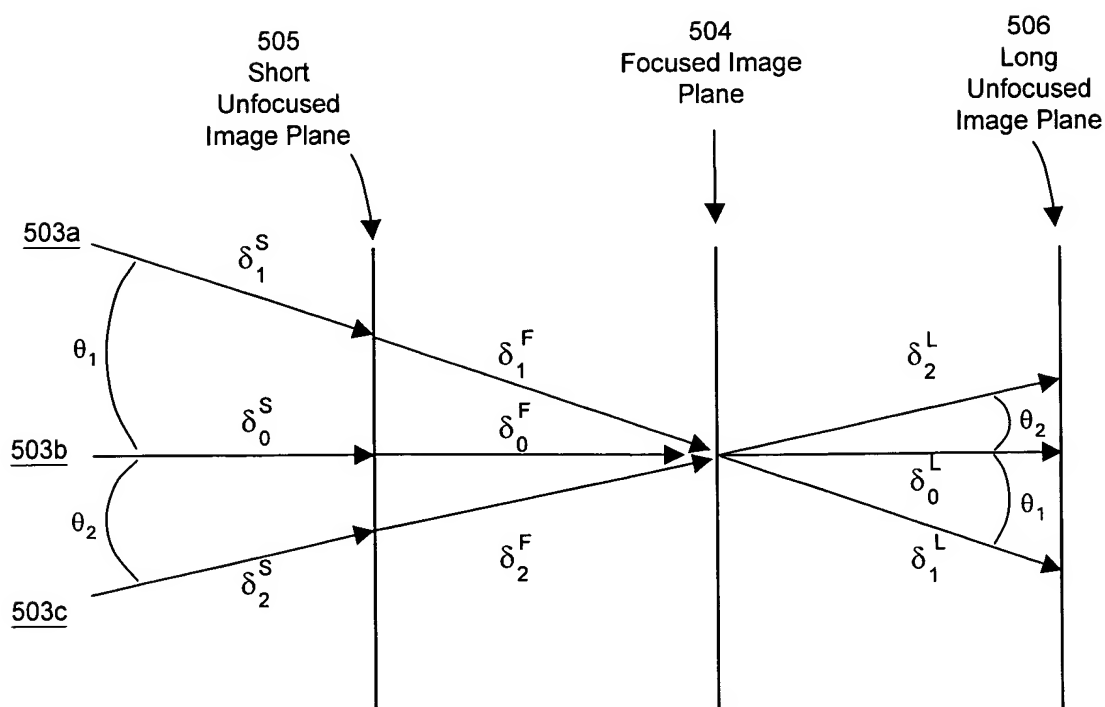
**FIG. 7**

**RELATIVE OPTICAL PATH PHASE RECONSTRUCTION  
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FRACTIONAL POWERS OF THE FOURIER TRANSFORM.**

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**FIG. 8**

**RELATIVE OPTICAL PATH PHASE RECONSTRUCTION  
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901

$$F^{\alpha} = ( |F^{\alpha}| \angle F^{\alpha} )$$

FrFT                  Amplitude                  Phase  
Operator                  component                  component

902

Optics → Math Correction → Corrected Result

$$F^{2-\epsilon} \cdot F^{\epsilon} = F^2$$

903

Optics → Math Correction → Corrected Result

$$( |F^{2-\epsilon}| \angle F^{2-\epsilon} ) \cdot ( |F^{\epsilon}| \angle F^{\epsilon} ) = F^2$$

904

Amplitude Only Image → Math Correction → Corrected Result

$$( |F^{2-\epsilon}| \underbrace{\hspace{2cm}} ) \cdot ( |F^{\epsilon}| \angle F^{\epsilon} ) \neq F^2$$

Missing phase information

905

Amplitude Only Image → Phase-Restored Math Correction → Corrected Result

$$( |F^{2-\epsilon}| ) \cdot ( \angle F^{2-\epsilon} \underbrace{|F^{\epsilon}| \angle F^{\epsilon}}_{F^{\epsilon}} ) = F^2$$

$$( \angle F^{2-\epsilon} \quad F^{\epsilon} )$$

**FIG. 9**



# RELATIVE OPTICAL PATH PHASE RECONSTRUCTION IN THE CORRECTION OF MISFOCUSED IMAGES USING FRACTIONAL POWERS OF THE FOURIER TRANSFORM

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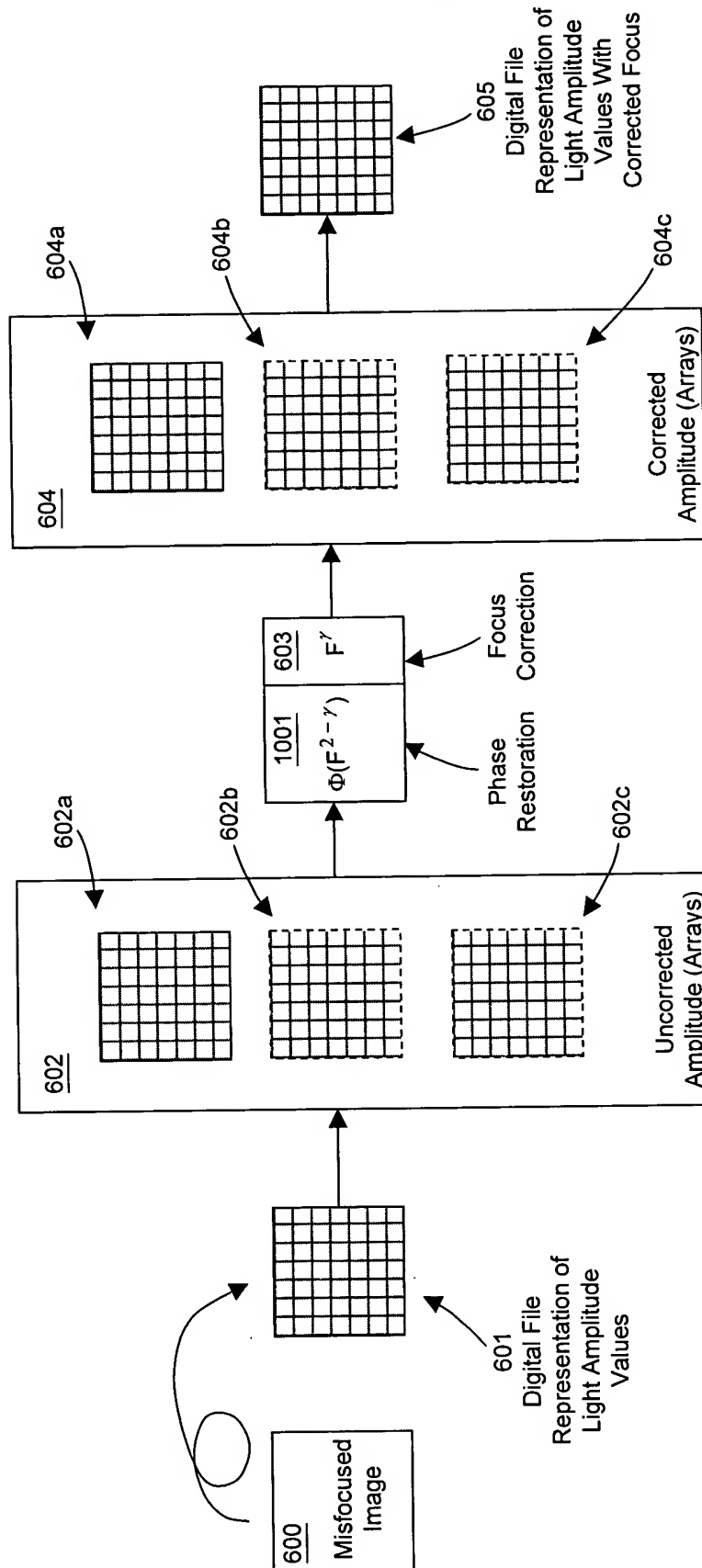


FIG. 10